REMARKS

The present Amendment is responsive to the Office Action mailed June 18, 2003 in the above-identified application.

In the Office Action, the Examiner rejected claims 1-5, 7, 9-12 and 15-23 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Publication No. 2002/0076490 to Chiang et al. ("Chiang"). Referring to FIGS. 13 and 25 thereof, Chiang discloses a process chamber 12 having a moveable shield 14. As shown in FIG. 25 thereof, Chiang's shield 14 includes a shield cooling/heating channel 304 for receiving a cooling or heating fluid. The cooling or heating fluid flows into shield 14 through at least one hollow shield support leg 306, which extends through shield cap 196 into cooling/heating channel 304. As described in paragraph 148 of Chiang, the shield cooling/heating channel 304 is "annular and runs about two-thirds of the way around the base of shield 14."

In response to the Examiner's §102(e) rejection, Applicants respectfully assert that Chiang does not disclose or teach the reactor claimed in the present application. As noted in paragraphs 38 and 39 of the present application, "temperature discontinuities across the face of a wafer may result in the formation of defective epitaxial layers." The use of the cylindrical shutter as set forth in the present application minimizes thermal and flow field discontinuities because, *inter alia,* the shutter and the internal cavity of the shutter completely surround the outer perimeter of the wafer, which is preferable to a shutter and internal cavity that borders only a portion of the peripheral edge of the wafer carrier, as disclosed in Chiang. Thus, Chiang's device actually results in one peripheral region of a wafer carrier having different temperature properties than another peripheral region of a wafer, which typically results in an epitaxial layer having different properties in different regions thereof. This undesirable situation is avoided when using the device of the

present application, which discloses a cylindrical shutter having an internal cavity that provides uniform temperature properties completely around the entire perimeter of a wafer carrier. In order to more clearly recite the scope of the present application, independent claim 1 has been amended as set forth above. Claim 1 is unanticipated by Chiang because Chiang neither discloses nor suggests a reactor including a reaction chamber having at least one wafer carrier secured within the reaction chamber and "a cylindrical shutter located inside said reaction chamber for selectively closing said passthrough opening . . . wherein said cylindrical shutter and said internal cavity of said cylindrical shutter completely surround said at least one of said wafer carriers secured within said reaction chamber." Claims 2-5, 7 and 9 are also unanticipated, *inter alia,* by virtue of their dependence from claim 1, which is unanticipated for the reasons set forth above.

Independent claim 10 has been amended to recite a reaction chamber whereby "said cylindrical shutter and said internal cavity of said cylindrical shutter completely surround said at least one of said wafer carriers secured within said reaction chamber." As noted above, Chiang's cooling/heating channel 304 extends only two-thirds of the way around the shutter. As a result, Chiang's device will cause temperature discontinuities across a wafer carrier secured within a reaction chamber. For all of these reasons, claim 10 is unanticipated by Chiang and is otherwise allowable. Claim 11 has been canceled (and its limitations incorporated into claim 10), thereby rendering the rejection of claim 11 moot. Claim 12 is unanticipated, *inter alia,* by virtue of its dependence from claim 10, which is unanticipated for the reasons set forth above. Claims 15-23 are also unanticipated, *inter alia,* by virtue of their dependence from claim 10, which is unanticipated for the reasons set forth above.

The Examiner also rejected claims 10 and 24 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,111,225 to Ohkase

et al. Referring to FIG. 2 thereof, Ohkase discloses a uniform-heating ring member 50 provided on a peripheral edge portion of holder 14. A circular arc-shaped portion corresponding to the gate valve G1 on one side of the uniform-heating ring member 50 is cut out and separated from the main unit side thereof to serve as a shutter portion 50A. A shutter rod 52 passes through the base portion of a processing vessel 4 for connection to the shutter portion 50A. An expandable metal bellows 54 that permits vertical movement while maintaining an air-tight seal is provided on the penetrating portion of the shutter rod 52, whereby the shutter portion 50A is able to move vertically by an elevator mechanism 53 when conveying a wafer into or out of the processing vessel 4. The shutter portion 50A is moved vertically in synchronization with the opening and closing of the gate valve G1.

In response to the Examiner's §102(e) rejection, Applicants respectfully assert that claim 10 is unanticipated by Ohkase because the cited reference neither discloses nor suggests a reaction chamber having a cylindrical shutter, "said cylindrical shutter being substantially hollow and including an internal cavity adapted to receive a cooling fluid, wherein said cylindrical shutter and said internal cavity of said cylindrical shutter completely surround said at least one of said wafer carriers secured within said reaction chamber." Claim 24 is unanticipated, by virtue of its dependence from claim 10, which is unanticipated for the reasons set forth above.

The Examiner rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over Chiang and Japanese Patent 07-07073 to Kawada et al. The Examiner has cited Kawada as teaching a reactor made of stainless steel. In response, Applicants respectfully assert that Kawada does not overcome the deficiencies noted above in Chiang. Thus, claim 6 is unobvious over the combination of Chiang and Kawada as is otherwise allowable.

The Examiner rejected claims 8 and 13-14 under 35 U.S.C. §103(a) as being unpatentable over Chiang and U.S. Patent

3,564,454 to Schrader. The Examiner has cited Schrader as teaching a wafer carrier secured to an upper end of a spindle. In response, Applicants respectfully assert that Schrader does not overcome the deficiencies noted above in Chiang. Thus, claims 8 and 13-14 are unobvious over Chiang and Schrader, and are otherwise allowable.

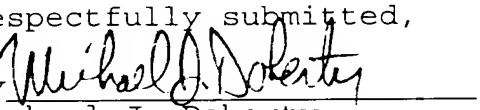
As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that she telephone Applicants' attorney at (908) 654-5000 in order to overcome any additional objections which she might have.

If there are any additional charges in connection with this requested Amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: September 17, 2003

Respectfully submitted,

By 

Michael J. Doherty
Registration No.: 40,592
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK, LLP
600 South Avenue West
Westfield, New Jersey 07090
(908) 654-5000
Attorney for Applicant

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